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SERVICE MANUAL
AND
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS
FOR
AEROCET GC700 GEAR ADVISORY

Aerocet, Inc.
P.O. Box 2119
265 Shannon Lane
Priest River, Idaho 83856
Phone: (208) 448-0400
Fax: (208) 448-1644

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SECTION 1. Introduction

This Component Maintenance Manual (CMM) and instructions for Continued Airworthiness (ICA) contains the maintenance instructions to install, maintain, inspect and repair Aerocet GC700 Gear Advisory assembly, and its general application to a variety of amphibious aircraft. This document does not contain complete maintenance information necessary to keep the airworthiness of the entire aircraft, but addresses to the extent reasonable such aspects pertaining to the gear advisory alone. This document is intended to be kept intact.

Thank you for purchasing the Aerocet GC700 Gear advisory. Built to operate at multiple system voltages and accommodate a variety of approach speeds and settings, the GC700 is both lightweight and durable, and designed to last the lifetime of your float and gear systems.

1.1 How to use this Supplemental Manual

Used in conjunction with the airplane Owner's Manual and Illustrated Parts Catalog, this supplemental manual provides the installer and the operator with a source of information for installing, removing and operating the Aerocet GC700 Gear Advisory.

This manual is organized as follows:

Operating Information: Instructions and information regarding the indicator lights and audio, as well as adjustment instructions.

Service and Maintenance Information contains necessary information for proper handling, recommended inspections, troubleshooting, removal and electrical overviews.

1.2 Warnings, Cautions and Notes

Certain information pertaining to specific operations is posted in relevant areas and should be carefully regarded as follows:

WARNING

An operating procedure, inspection, repair or maintenance practice, which if not correctly followed, could result in personal injury, or loss of life.

CAUTION

An operating procedure, inspection, repair or maintenance practice, which if not strictly observed, could result in damage or destruction of equipment.

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NOTE

**An operating procedure, practice or condition, etc., which is
deemed essential to highlight.**

Units of Measure: The customary linear unit used in this document is the Decimal inch, unless otherwise specified.

1.3 Availability

One complete hard (paper) copy of this manual shall be provided with each new GC700 Gear Advisory. Additional copies and minor revisions shall be available via email, U.S.P.S (mail), UPS or FedEx by request. Fees and delivery charges may apply.

Notification of any changes that require service for airworthiness shall be distributed to all applicable Aerocet owners on record with Aerocet, Inc. In such a case, copies of the applicable, revised portions of this manual shall be provided.

Aerocet, Inc. maintains record of purchasers and/or owners, collected at the time of purchase in order to comply with the above, as well as to maintain a high standard of service. If you have moved since your original purchase, have purchased a used product or otherwise have reason to believe that the contact information on file is incorrect, please provide the following information to Aerocet, Inc: (Aerocet contact information is on the front of this document.)

Gear Advisory information:

Unit model_____

Unit S/N (R/L)_____

Aircraft Information:

Aircraft Make/Model_____

Aircraft Registration_____

Aircraft S/N_____

Other Information: (as applicable)

Previous Owner_____

Previous Address_____

Present Owner_____

Present Address_____

Present Phone Number_____

Present E-mail Address_____

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1.4 Description

The GC700 Gear Advisory is a reliable, audio and visual confirmation of nose and main gear positions. Compact and lightweight, the GC700 is airspeed adjustable and multi-voltage compatible, designed to operate on a wide variety of aircraft.



Figure 1.4.1
GC700 Gear Advisory

Aerocet is committed to safe and trouble free operation of the GC700 gear advisory unit. Developed to be virtually free of operator maintenance and adjustment. Any internal repairs or troubleshooting of the unit, shall be accomplished by Aerocet, Inc.

1.5 Dimensions, Locations and Nomenclature

The Aerocet GC700 Gear Advisory Housing measures 3.22 X 3.23 X 4.07 deep, and weighs approximately 12.8 oz. The unit fits in an un-used instrument cut-out, designed for a standard 3-1/8" diameter bezel face. Fastened with 4 ea. 6-32 UNC screws, with a maximum fastener penetration into box of 1/2", on a 2.47 square hole pattern. The GC700 operates on 10-30 volts DC, and is protected with 1, 1 amp breaker. Pitot system is fed to the back of the unit via 1/4" x .050 wall, semi-rigid nylon tubing. (See section 3 for complete installation specifications).

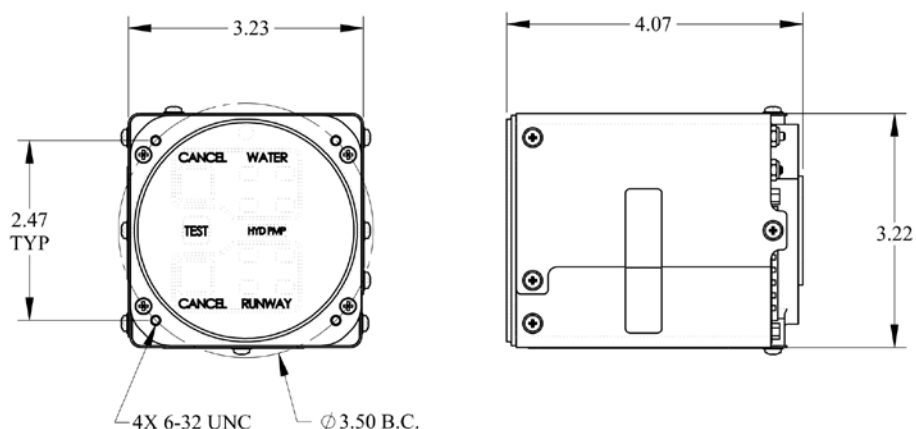


Figure 1.5.1
Housing and Mounting Hole Dimensions

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SECTION 2. Operating Information

2.1 Lights

Translucent blue lights indicate individual gear in the fully up position, (water landing). Upper two lights represent the nose gear, lower two lights represent the main gear.

Translucent amber lights indicate individual gear in the fully down position, (runway landing). Upper two lights represent the nose gear, lower two lights represent the main gear.

When the Directional Control Handle on the Hydraulic Hand Pump is moved from “GEAR UP” or “GEAR DOWN” positions, the blue and amber individual gear lights will temporarily go out as each gear leaves its position. As each gear reaches its full travel destination, indicator lights will illuminate.

The backlight intensity is controlled by the photo sensor located in the upper center of the unit front face. The intensity is automatically controlled by the ambient light intensity. Brightness is increased for better visibility during daytime and reduced for better visibility during night time.

The “TEST” button in the center left position of the face illuminates all lighting on the unit to verify proper operation at each position. Intensity of lights may vary when the “TEST” button is depressed, but still offer indication that all lights are functioning.

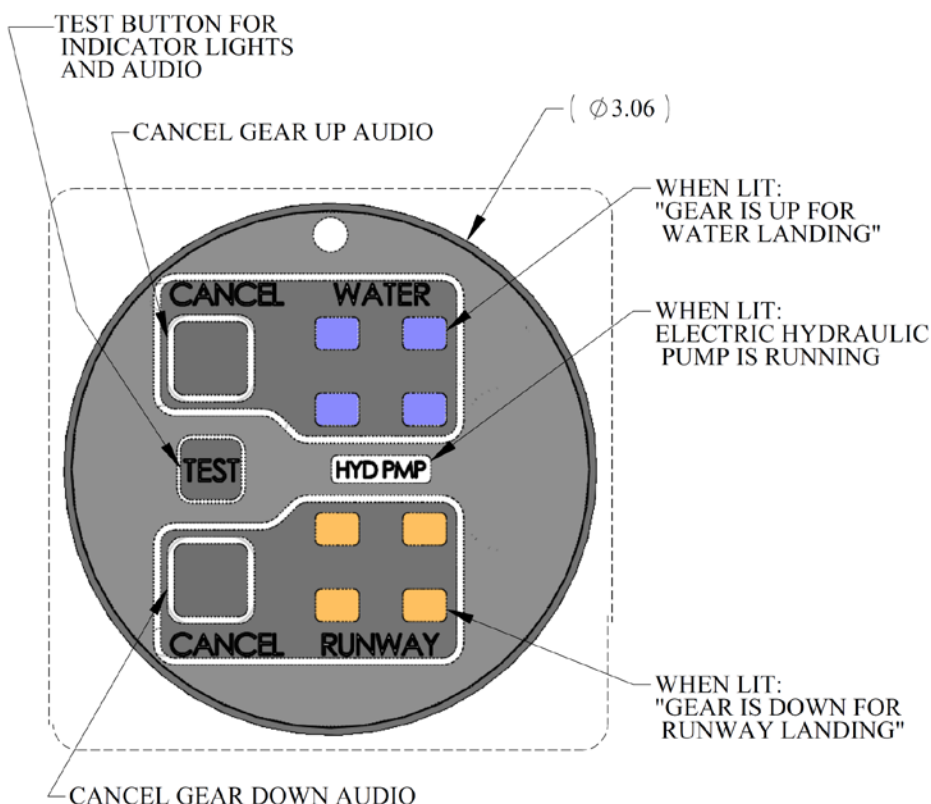


Figure 2.1.1

Indicator Light Pattern, Display face

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2.2 Audio Reference Figure 2.1.1

The GC700 audio announcements are triggered at airspeed “ARM” and “TRIGGER” settings, which are factory pre-set for the aircraft type. The GC700 is armed when the aircraft accelerates through the “ARM” speed. As the aircraft enters its approach for landing, it decelerates through the pre-set trigger speed, triggering an audio announcement of the gear position. If the gear is not in a fully retracted or a fully deployed position, then a gear unsafe announcement will sound.

With all blue lights on, the announcement will sound, “Water landing, gear is up for water landing.” This announcement will continue to repeat and complete the phrase, until the upper “CANCEL” button is pushed, or the aircraft accelerates above the trigger airspeed setting.

With all amber lights on, the announcement will sound, “Runway landing, gear is down for runway landing”. This announcement will continue to repeat and complete the phrase, until the lower “CANCEL” button is pushed, or the aircraft accelerates above the trigger airspeed setting.

If any indicator light within the WATER quadrant, or RUNWAY quadrant, fails to illuminate, then the announcement will sound, “Gear is unsafe, check gear.” This announcement will continue to repeat and complete the phrase, until either upper or lower Cancel button is pushed to de-activate.

The “TEST” button in the center left position of the face, when depressed, will sound an audible announcement indicating the current position of the gear. One of three announcements listed above, will repeat as long as the button is depressed. This announcement will continue to repeat and complete the phrase, until the TEST button is released.

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2.3 Settings

On the bottom side of the housing, a label is located over two access slots, concealing six potentiometers. Pull back the label to access these pots and change settings with a .04 slotted screwdriver. Turning the pots clockwise increases the value or counter-clockwise to decrease value. All adjustments are initially made at Aerocet, Inc. Adjustment pots 1, 2, 3 and 6 are user adjustable. **Adjustment pots 4 and 5 are factory set; user accepts liability for altering these settings.**

The functions for these pots are as follows:

#1 – **Low Light Adjustment**, sets light level for night viewing. Adjust pot in dark environment or cover the photo sensor to simulate night time flying. Note; when altering low light adjustment, it is necessary to re-adjust high light adjustment setting, #2.

#2 – **High Light Adjustment**, sets light level for bright day time viewing. Adjust pot in daylight environment to simulate day time flying. Note; when altering high light adjustment, it is necessary to re-adjust low light adjustment setting, #1.

#3 – **Voice Volume Adjustment**, sets audio level for all gear advisory announcements. Used in conjunction with the aircraft audio system.

#4 – **Trigger Adjustment**, factory setting; When the aircraft passes below a set air speed, one of three audible announcements will sound. (See Table 2.3 for factory settings)

#5 – **Arm Adjustment**, factory setting; When the aircraft passes above a set air speed, the unit is armed and ready for automatic audible operation. (See Table 2.3 for factory settings)

#6 – **Voice Pitch Adjustment**, sets rate that voice announcements are delivered. Adjust this pot until a comfortable and natural voice delivery is achieved.

LABEL REMOVED
SHOWING ACCESS
SLOTS TO
POTENTIOMETERS

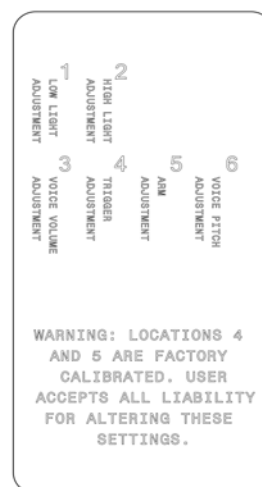
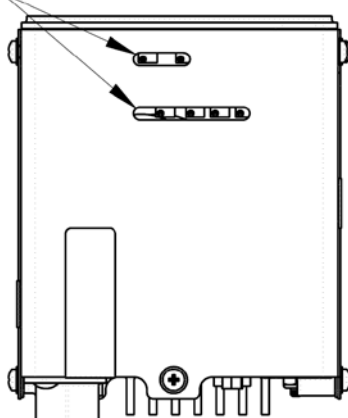


Figure 2.3.1

Housing bottom view with label removed,
and enlarged view of Setting Adjustment Label

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Table 2.3 – Arm and Trigger Speeds, factory settings (unless otherwise specified).

Aircraft	Floats	Arm Speed (kts)	Trigger Speed (kts)
Cubcrafters CC11	Model 1500	78	51
Quest Kodiak 100A	Model 6650	100	85

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SECTION 3. Service and Maintenance Information

3.1 Handling of Components

Any unit containing electronic components, such as transistors, diodes, integrated circuits, proms, roms, and memory devices are subject to damage by electrostatic discharges (ESD), and should be protected from static discharge.

CAUTION

To prevent damage from electrostatic discharge, observe standard procedures for handling equipment containing electrostatic sensitive devices or assemblies, in accordance with the recommendations and procedures set forth by the electronics industry.

Care should be taken by the technician to properly ground the electrical system of the aircraft and himself to a common point ground. A properly connected ESD strap should be used.

Maintain a clutter free work space and avoid conductive materials in, and around the work area. Avoid touching unconnected contacts and leads that can carry static charges through the unit and damage sensitive components within.

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3.2 Installation

3.3 Air Line connections

Connect the Gear Advisory unit to the pitot system using the following Nylo-Seal fittings:

268-N 04 x 02 1/4" Tube to 1/8" NPT fitting

264-N 04 Union Tee

44-NSR 1/4" Semi-Rigid Nylo-Seal Tubing

Or Substitute with:

Parker Paraflex NR-4-050 or

Parker NNR-4-050 (natural) or NBR-4-050 (black)

And with other Nylon 11, 1/4 O.D. x .050 wall semi-rigid tubing, suitable for use with compression style the thermoplastic fittings

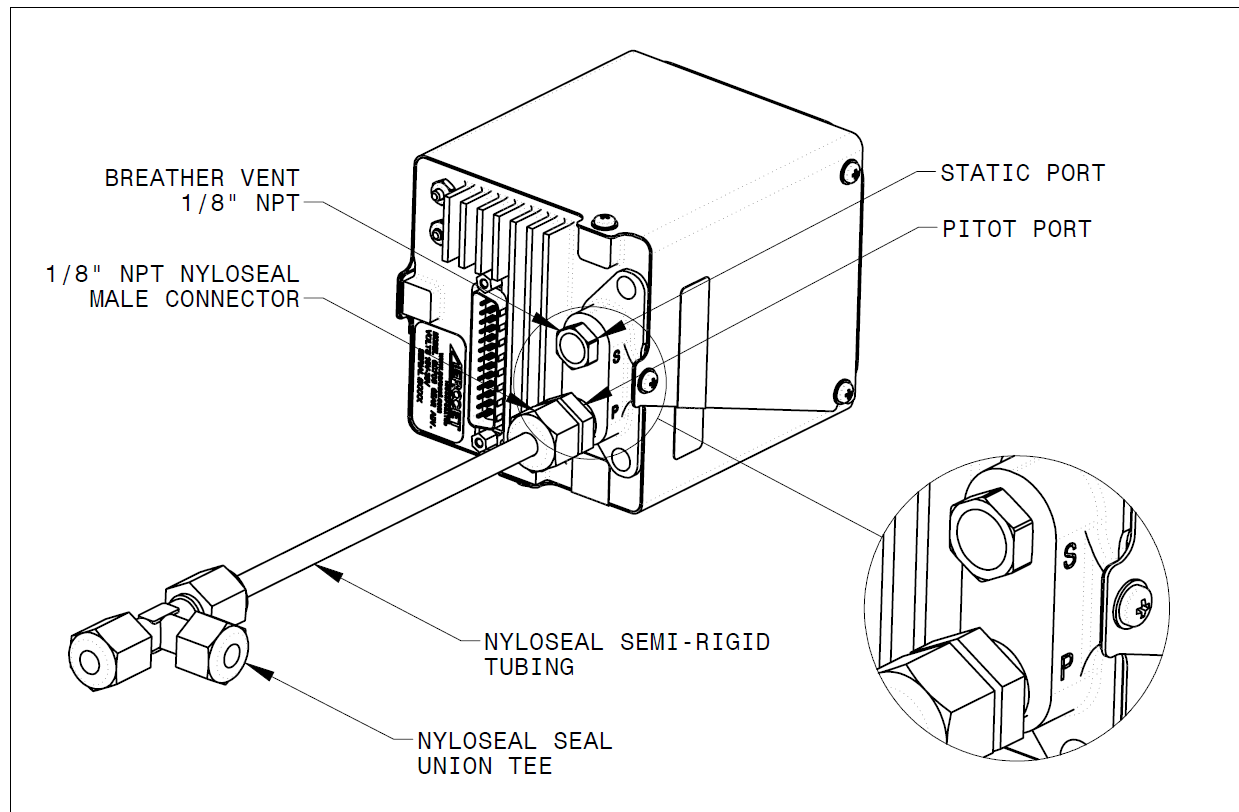


Figure 3.3.1

Tube connections to Pitot system

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3.4 Electrical Connections

Figures 3.4.1. and 3.4.2. show the intended arrangements for the GC700 as installed with **Aerocet Model 1500 floats** as an overview. Use Aerocet Drawings 15-46010 <Float Schematic> and 15-60015 <Installation Schematic> for detailed specifics. Other applications must match this arrangement in order to implement the GC700 correctly.

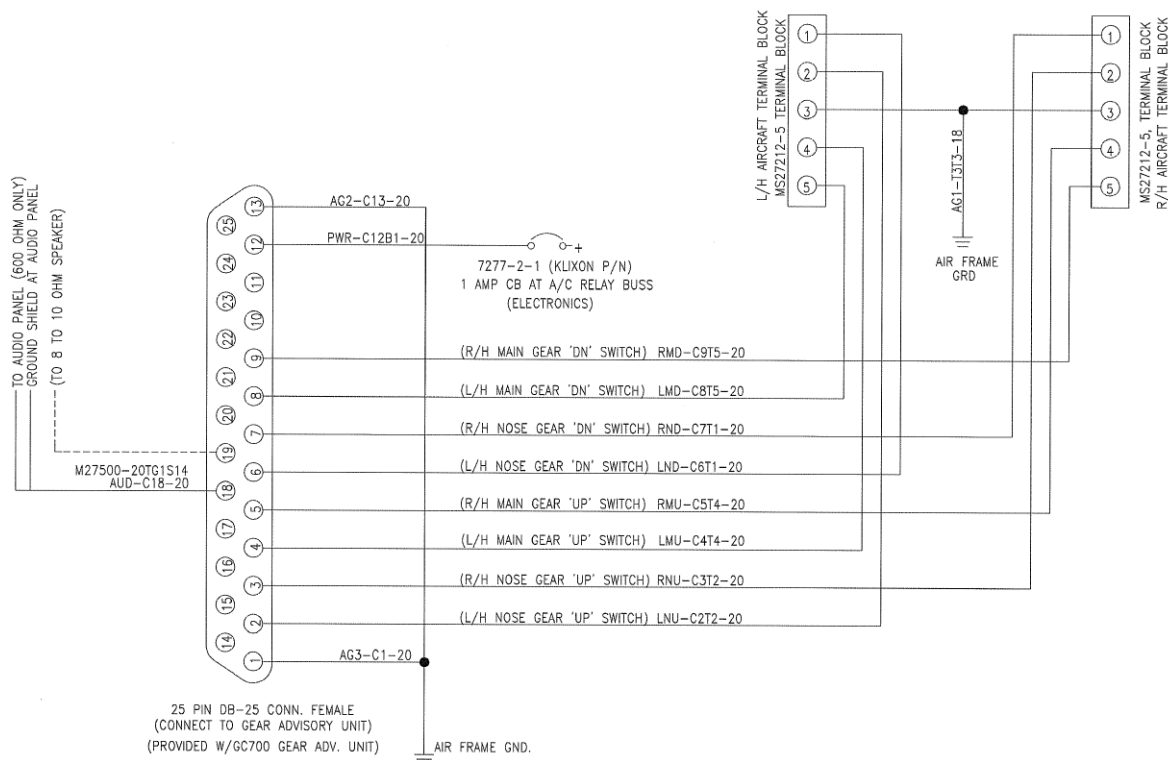


Figure 3.4.1

General wiring schematic and harness connector
Pin layout for Aerocet Model 1500 Floats

(Use Aerocet Dwg. No. 15-15000)

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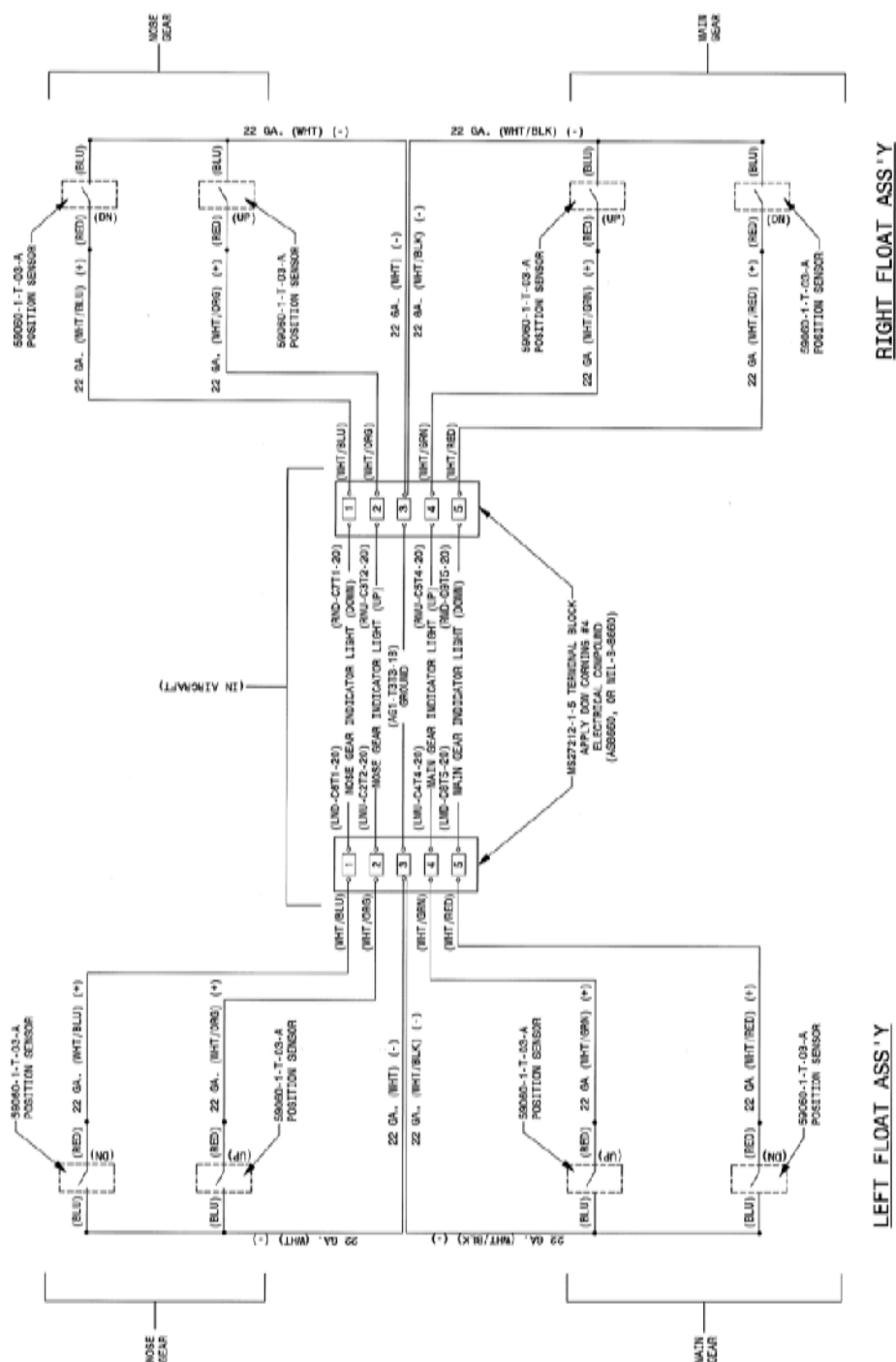


Figure 3.4.2

General wiring schematic for 1500 Float and Sensor layout
(Use Aerocet Dwg. No. 15-60010)

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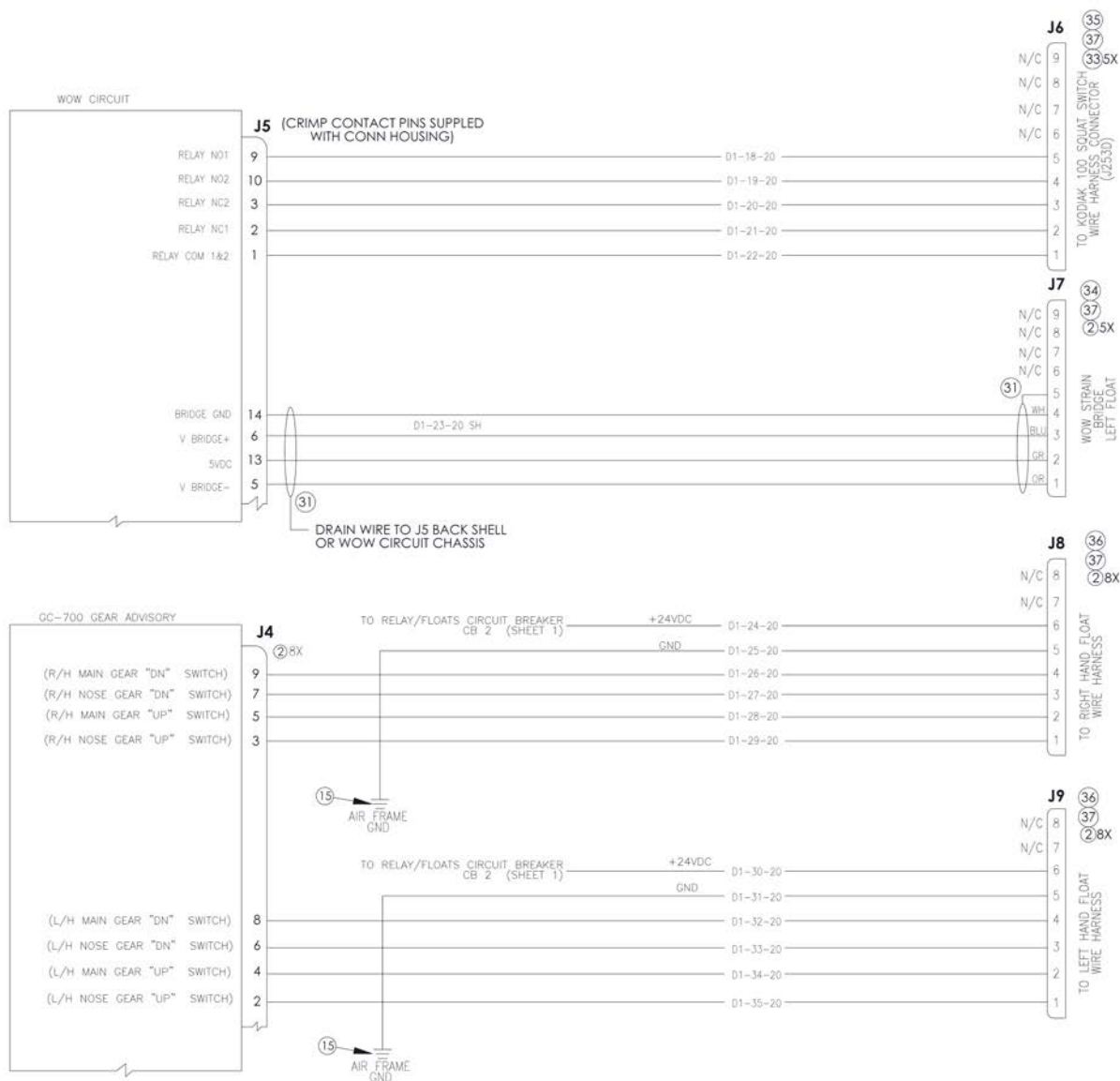
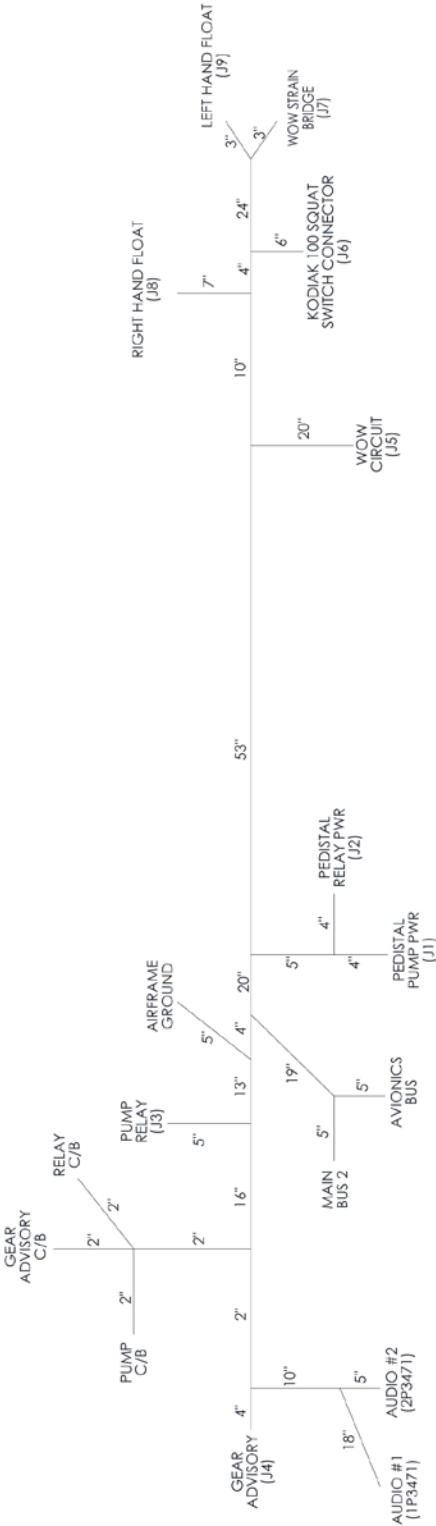


Figure 3.4.5

General wiring schematic and harness connector Pin layout for Aerocet Model 6650 Floats
(Use Aerocet Dwg. No. 66-15000)

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- NOTES:

 - FOR CRIMPED CONTACTS AND TERMINALS, USE THE FOLLOWING TOOLS AS APPLICABLE PER MANUFACTURER'S INSTRUCTIONS EQUIVALENT TOOLS MAY BE USED BUT MUST FIRST BE APPROVED BY AEROCET ENGINEERING.
- | CONNECTOR/CONTACT TYPE | WIRE SIZE | HAND CRIMPING TOOL | POSITIONER | INSERTION/EXTRACTION TOOL |
|--------------------------------|-----------|----------------------------------|-------------|---------------------------|
| M39029/63-368
M39029/64-369 | 22-20 AWG | M22520/2-01 or
AI-M22520/2-01 | M22520/2-08 | M81969/01-02 |
| 66261-2 | 12-16 AWG | AI-17000 | N/A | N/A |
| 66-60021 | 14-18 AWG | AI-17000 | N/A | N/A |
| 66-60022 | 10-12 AWG | AI-17000 | N/A | N/A |
| 66-60024 X | 12-22 AWG | TE CONNECTIVITY
59824-1 | N/A | N/A |
- WRAP BUNDLE WITH SEALING TAPE, ITEM 30, AS REQUIRED TO PROVIDE SNIUG FIT INSIDE CONNECTOR STRAIN RELIEF.
 - LABELS, PERMANENTLY MARKED WITH CONNECTOR IDENTIFIER, SHALL BE INSTALLED AROUND BUNDLE WITHIN 1 INCH OF CONNECTOR.
 - ALL WIRE SHALL BE LABELED WITH IDENTIFYING LABEL. (SEE SCHEMATIC, FORMAT: DI-XX-XX) WITHIN 6 INCHES OF ENDS AND AT MID-LENGTH OF WIRE. OR NO GREATER THAN 6" INTERVALS. WIRES LESS THAN 3-1/2" NEED NOT BE IDENTIFIED. (DI = HARNESS NUMBER, -XX = SEQUENTIAL NUMBER WITHIN THIS HARNESS, -XX = "WIRE GAGE")
 - WIRE BUNDLE TO BE OVER SLEEVED WITH ITEM 21. ENDS TO BE CAPTURED BY CONNECTOR BACKSHELL CLAMPS AT EACH CONNECTOR. USE CABLE TIES, ITEM 22 TO SECURE CUT ENDS OF EXPANDABLE SLEEVING AT SPLICES AND Y'S IN THE HARNESS.
 - SEAL ITEMS 11 & 13 AFTER CRIMPING WITH HEAT GUN
 - RELAY IS SHOWN FOR REF ONLY. PART OF 66-12700 ASSEMBLY.
 - AIRFRAME GROUND ≡ BACKSHELL GROUND
 - STRIP OUTER JACKET AND SHIELD AS REQUIRED TO MAKE THE REQUIRED CONNECTIONS. TRIM SHIELD FLUSH TO OUTER JACKET AND PLACE 0.5" HEAT SHRINK TUBING, ITEM 32, OVER EXPOSED SHIELD END. J1 AND J9 ARE PART OF 66-12720 FITTING AND RECEPTACLE ASSEMBLY. ITEMS 1 AND 2 MATE INTO THESE PARTS WHEN INSTALLED INTO THE AIRCRAFT FUSELAGE. THESE CONNECTOR PARTS ARE LISTED BELOW FOR REFERENCE ONLY.
- | REFERENCE BILL OF MATERIALS | | DESCRIPTION | MANUFACTURER |
|-----------------------------|-------------|--|-----------------|
| ITEM NO. | PART NUMBER | | TE CONNECTIVITY |
| 1 | 206425-1 | CONNECTOR RECEPT, SHELL SIZE 17, SERIES 3 CPC, 3 POS | TE CONNECTIVITY |
| 2 | 206070-8 | CONNECTOR CABLE CLAMP, CPC, SIZE 17, BULK | TE CONNECTIVITY |
| 3 | 206433-1 | CONNECTOR RECEPT, 8 POSITION, SERIES 2, CPC | TE CONNECTIVITY |
| 4 | 1-206062-5 | CONNECTOR CABLE CLAMP, CPC, SIZE 11 | TE CONNECTIVITY |

Figure 3.4.6

General wiring schematic and harness connector Pin layout for Aerocet Model 6650 Floats
(Use Aerocet Dwg. No. 66-15000)

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3.5 Instrument panel Installation

The unit fits in an un-used instrument cut-out. Designed for a standard 3-1/8" diameter bezel face. Determine the fastener length for 4 ea. 6-32 UNC screws by adding the thickness of the control panel with 1/2 inch maximum screw protrusion through the mounting screw hole pattern.

CAUTION

Do not allow greater than 1/2 Inch of protrusion of the 6-32 UNC fasteners, through the front face of the gear advisory unit. Round down to the next available screw size, when necessary. If not strictly observed, damage of the unit could occur.

3.6 Product Listings

LPS® Electrical Contact Cleaner, for connectors, or equivalent. Use a fast drying, multi-purpose industrial cleaner which evaporates quickly without a residue.

LOCTITE® 222 Thread Locker, (blue), or Permatex equivalent, for securing small mounting fasteners. Use a medium strength thread locker capable of withstanding vibration.

GC ELECTRONICS® Silicone Z9, or Type I (silicone) or Type II (non-Silicone) or equivalents, for sealing electrical joints and connectors.

3.7 Fastener Torque

Small Diameter screws should be tightened approximately 1/4 turn past run-up of the assembly. Brass and aluminum screws are easily stripped, so care should be exercised not to over-torque.

Nylon 1/8-27 Adapter fittings should be tightened 2 turns past run-up. If fitting is removed and re-installed, Teflon tape or pipe dope should be applied to threads and tightened as listed above. Do not apply Teflon tape or pipe dope to the extreme ends of fittings to avoid fouling system.

3.8 Inspections, Scheduled

A. Preflight:

Conduct Preflight inspections according to the existing aircraft owner's manual and add the following to the Instrumentation group.

1. Depress "TEST" button to confirm that all position LED's are functioning properly. Note, light intensity may vary but is indication that all lights are functioning. Verify that an audible announcement sounds, indicating current gear position.

B. Daily:

Conduct Daily inspections according to the existing aircraft owner's manual.

C. Periodic:

Conduct Periodic inspections according to the existing aircraft owners' manual and add the following to the Instrumentation group.

1. Pitot system; Test in accordance with the aircraft manufacturer's instructions.

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3.9 Inspections, Un-Scheduled

1. Lights, audio malfunctions or unexpected behavior should be investigated.
2. Anytime that the aircraft's electrical components such as generators, alternators or batteries have been replaced. Verify current, voltages and function.
3. Following incidents which induce abnormal mechanical loads to airframe.
4. Following lightening strikes. Verify current, voltages and function.

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SECTION 4. Troubleshooting

Table 4.1 Troubleshooting Model GC700 Gear Advisory		
Lights		
Detected Problem	Possible Causes	Corrective Action
Gear Lights do not illuminate at all when TEST Button is depressed.	Power supply is not connected, or is inadequate.	Ensure proper battery, power buss and hook ups according to appropriate Maintenance Manual(s).
		Check for broken connections, proper hook up according to installation schematic.
		Refer to "ring-out" procedures in this manual for the DB-25 connector.
	Internal components are compromised.	Return the GC700 unit to Aerocet, Inc. for service.
Gear Lights do not illuminate with equal intensity during operation.	Internal components are compromised.	Return the GC700 unit to Aerocet, Inc. for service.
Light intensity is either too bright or too dim for daytime or nighttime visibility.	Factory presets are not desirable.	Refer to Section 2.3 of this manual to obtain desired settings.
Light intensity does not adjust for daytime or nighttime conditions.	Photo sensor is obstructed.	Remove obstruction.
	Interior light source, such as a flashlight or an overhead light, is affecting the photo sensor.	Turn off the light source, or change its target. (Light intensity should adjust immediately.)
	Internal components are compromised.	Return the GC700 unit to Aerocet, Inc. for repair.
Nose or Main Gear Lights do not illuminate when the gear are fully positioned.	Gear Sensors are incorrectly installed, mis-wired or malfunctioning.	Check the position sensors according to the applicable schematic, maintenance manuals, etc.
		Check the wiring for corrosion, poor connections or damage.
		Check all wire grounds.
	Internal components are compromised.	Return the GC700 unit to Aerocet, Inc. for repair.

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Table 4.1 Troubleshooting Model GC700 Gear Advisory

Circuit Breaker

Detected Problem	Possible Causes	Corrective Action
1 amp Circuit Breaker on bus bar opens.	Hook up wiring is compromised. (CB for internal relays only)	Check for faults with installation wiring. This includes corrosion, damaged insulation or improper hook up. Ref installation schematic and maintenance manual.
	Internal components are compromised. (CB for electronics only)	Return the GC700 unit to Aerocet, Inc. for repair.

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Table 4.1 Troubleshooting Model GC700 Gear Advisory

Audio

Detected Problem	Possible Causes	Corrective Action
Audio Warning does not activate.	Volume is too low, or audio wiring is incorrectly installed.	Check Aircraft Audio Panel settings and hook up.
	Static or Pitot system is compromised.	Have a qualified technician check the Static and Pitot systems.
	Internal components are compromised.	Return the GC700 unit to Aerocet, Inc. for repair.
	Trigger Speed is not correctly set.	Refer to Section 2.3 of this manual to obtain desired settings.*
Audio Warning does not activate after a "Go Around"	Airspeed did not exceed the "Arm" speed.	Increase airspeed during the downwind leg of a "Go Around" procedure.
	The "Arm" speed setting is too high.	Refer to Section 2.3 of this manual to obtain desired settings.*
Audio Warnings continue to activate.	Incorrect Cancel Button is being depressed.	Depress the cancel button for the operation. e.g. the upper Cancel Button for cancelling the "Gear is UP..." warning.
Audio Warnings continually reactivate while flying "in the pattern" after depressing the correct cancel button.	Airspeed is too close to "Arm" and "Trigger" speeds.	Maintain slightly higher speeds.
	The "Arm" and "Trigger" speed settings are too high. e.g. the aircraft is hovering near the Arm and Trigger speeds, re-arming the unit and triggering it again during pattern work.	Refer to Section 2.3 of this manual to obtain desired settings.*
Audio Warning repeats "Gear Unsafe, Check Gear", although Nose and Main gear lights may be illuminated and gear is fully positioned.	Hook up wiring is compromised.	Check for faults with installation wiring. This includes corrosion, damaged insulation, loose or corroded terminal lugs and ground contacts.
	Gear Sensors are incorrectly installed, mis-wired or malfunctioning.	Check the position sensors for damage and adjustment, according to the applicable schematic, maintenance manuals, etc.

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Table 4.1 Troubleshooting Model GC700 Gear Advisory

Audio

Detected Problem	Possible Causes	Corrective Action
Audio Volume is too low.	Aircraft Panel Adjustments are incorrect or have been inadvertently lowered.	Adjust the panel settings according to the appropriate Maintenance Manual or Pilot Operation Handbook or Flight Manual.
	Aircraft Power is low.	Refer to Aircraft Maintenance Manual to ensure adequate current and power storage.
		Check, recharge or replace the battery. Refer to Section 7 of this manual for GC700 Ratings.
	Factory presets are not desirable.	Refer to Section 2.3 of this manual to obtain desired settings.
Audio Volume is too high.	Aircraft Panel Adjustments are incorrect or have been inadvertently raised.	Adjust the panel settings according to the appropriate Maintenance Manual or Pilot Operation Handbook or Flight Manual.
	Factory presets are not desirable.	Refer to Section 2.3 of this manual to obtain desired settings.
Speech in the audio is too fast or slow.	Settings have been changed.	Refer to Section 2.3 of this manual to obtain desired settings.
	Factory presets are not desirable.	
Speech is garbled during normal flight procedures.	Hook up wiring is compromised.	Check for faults with installation wiring. This includes corrosion, damaged insulation or improper hook up. Ref installation schematic and maintenance manual.
	Internal components are compromised.	Return the GC700 unit to Aerocet, Inc. for repair.

*Arm and Trigger Settings are factory set. User accepts all liability for altering these settings.

**Opening of the GC700 case for any reason will void any warranty.

The Gear Advisory unit is a sealed unit and should be returned to Aerocet, Inc. for any servicing.

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SECTION 5. Removing and Replacing Product

1. Locate installed GC700 unit and clear work area in cabin of all unnecessary obstructions.
2. Disconnect Pitot line from back of unit.
3. Disconnect DB-25 Connector from the back of unit.
4. Remove brass machine screws from the front face of unit through the aircraft instrument panel.
Remove from behind panel.
5. Installation is reverse of 5.1 thru 5.4

SECTION 6. Special Tools Required

- Standard .04 slotted, jewelers' screwdriver.
- Phillips # P0 screwdriver
- Phillips # P1 screwdriver
- 7/16" SAE open end wrench

SECTION 7. Electrical Loads Applicable

GC700 operates at 10 to 30 volts DC, >1 amp.

7.1 Electrical "Ring out" Test

Before the GC700 Gear Advisory unit is connected, check voltages with a digital volt meter to insure that the proper voltages are present. For 12 volt systems, (+12 to 14 VDC) and for 24 volt systems, (+24 to 28 VDC), at power pin 12 of the 25 pin connector, relative to the aircraft ground.

With the same digital meter set to OHMS, check pins 1 and 13 of the 25 pin connector, to ensure that they are less than .5 ohms to aircraft ground. Also, check at the terminal blocks located within the floats, at pin 3 for similar readings.

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SECTION 8. Airworthiness Limitations

8.1 General

The Airworthiness Limitations section is FAA approved and specifies inspections and other maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

8.2 Description

1. Time Limited Items;

None

2. Required Inspections Interval;

None

3. Scheduled Maintenance;

For Aerocet recommended Inspection or Replacement, see Section 3